

Chapter 1

Purpose and Need for Action

1.1 INTRODUCTION

The Big Timber Ranger District of the Gallatin National Forest has conducted an environmental analysis to evaluate fire risk and the potential effects of implementing a hazardous fuel reduction project on National Forest System lands in the portions of the East Boulder River corridor that have been identified as a wildland /urban interface (See Map 2). This Environmental Assessment (EA) was prepared in compliance with the National Environmental Policy Act (NEPA) and provides information to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of the NEPA process is to help public officials make decisions that are based on an understanding of environmental consequences, and to take actions that protect, restore, and enhance the environment (40 CFR 1500.1(c)).

The Healthy Forests Restoration Act of 2003 defines wildland/urban interface (WUI) as the area adjacent to an at-risk community that is identified in the community wildfire protection plan. If there is no community wildfire protection plan in place, the WUI is the area 0.5 mile from the boundary of an at-risk community; or within 1.5 miles of the boundary of an at-risk community if the terrain is steep, or there is a nearby road or ridgetop that could be incorporated into a fuel break, or the land is in condition class 3, or the area contains an emergency exit route needed for safe evacuations (Condensed from HFRA § 101).

The East Boulder project area qualifies as an “At-Risk Community” because it contains “other structures with basic infrastructure and services (i.e. utilities and collectively maintained transportation routes) within or adjacent to Federal land” (HFRA, Section 101.(1).(A).(ii)). The East Boulder community is listed as a priority for treatment in the September 2008 Sweet Grass County Community Wildfire Protection Plan (CWPP, Project File, p. 43) and also occurs on the list of proposed vegetation management/fuel modification projects in the CWPP (Project File, p. 53). Conditions on adjacent federal land have been determined to have high fire risk, hazard, and occurrence. This risk equates to HFRA, Section 101(1).(A).(ii).(B) “where conditions are conducive for a large-scale wildland fire disturbance event”, and (C) for which “a significant threat to human life or property would exist as a result of a large wildland fire disturbance event”. Vegetation treatments that reduce fuels around the wildland/urban interface (WUI) are the primary focus of the proposed project

The Sweet Grass County CWPP (Project File) states that “County history has proven the high potential for large wildfires when enough continuous fuels are available and when certain weather conditions are present. When conditions of extreme fire behavior exist, little can be accomplished aside from evacuating people from harm’s way and keeping firefighters in safe positions. During one of these events, the actions that have been taken

beforehand will generally prove to be much more effective than any actions taken during the event (p. 44).”

The Sweet Grass County CWPP goes on to identify the East Boulder Fuels Reduction Project (Proposed Project 6.6.1.1.3, p. 53) as a US Forest Service project being designed in conjunction with the Fuels Committee of the Boulder River Watershed Group that would reduce hazardous fuels in the East Boulder River Corridor.

The East Boulder Watershed Risk Assessment (November 2007), prepared by a team of resource specialists from the Gallatin National Forest, also identified the potential for severe wildfire, with current fuel conditions in the East Boulder River Corridor, as the greatest threat to numerous values in the East Boulder Watershed. These values include public and firefighter safety, the East Boulder Mine, numerous private inholdings and structures, and water quality in the East Boulder River.

In discussing fuel treatments in higher elevation forests, Jack Cohen (2009) stated: “By doing fuels projects in areas of high social importance (e.g. homes), then we can hopefully allow more natural fire to burn outside of this “contrived” area. Be honest that we are not doing ecological work by thinning high elevation forests, but we are reducing the potential for crown fires.” As it pertains to fuel structures along evacuation routes and existing infrastructure, Cohen (2009) continues by stating: “In some cases, we will not be able to modify the fuels enough to save homes, but maybe to reduce fire intensity along travel corridors enough so that people can survive in their vehicles.” thus allowing responding emergency personnel more time to evacuate an area.

This project is part of the Gallatin Forest’s ongoing emphasis on implementing projects that increase firefighter and public safety in the event of a severe wildfire and is part of a broader program to implement the National Fire Plan (USDA Forest Service, 2000). Some of the important partners in the development of this project include private landowners and stakeholders, special interest groups, Boulder River Watershed Group, Sweet Grass County, Sweet Grass County Rural Fire Department, Stillwater Mining Corporation, Northern Rocky Mountain Resource Conservation and Development, and the Department of National Resources and Conservation.

This Environmental Assessment was prepared to address the direct, indirect, and cumulative environmental effects of the proposed fuel reduction treatments in the East Boulder River Corridor WUI. The primary goal for this proposal is to lesson the risk to the public and increase firefighter safety in the event of a future wildfire occurring in the drainage.

1.2 DESCRIPTION OF THE PROJECT AREA

The proposed project area is located in the Absaroka Mountain Range in the southern portion of the Big Timber Ranger District in Sweet Grass County, Montana. The East Boulder Road #205 branches off of the Main Boulder highway approximately 20 miles south and west of Big Timber and is a highly maintained gravel road that follows the East Boulder River from its confluence with the Main Boulder River to the Stillwater Mining Corporation's East Boulder Mine complex at its terminus. Approximately 6-7 miles of this road are adjacent to private lands up to the forest boundary, and an additional 5-6 miles of the road extend from the forest boundary to the mine with areas of private ownership interspersed (See Vicinity Map 1). The East Boulder corridor is bounded to the south by the East Boulder Plateau and to the north by Long Mountain. The area surrounding the East Boulder Mine consists of a "box canyon" cirque with steep sides and the East Boulder River flowing roughly 3000-4000 feet below the high elevation plateaus, which are located on both the north and south sides of the canyon. The drainage is characterized by a combination of rocky timbered slopes, scree slopes, and occasional meadows. Much of the area is forested with vegetation forming a continuous canopy of both surface and ladder fuels. The project area is heavily utilized for mining operations and to a lesser degree by recreation users.

In accordance with the 1987 Gallatin Forest Plan EIS Inventoried Roadless Analysis (IRA), the proposed project area lies adjacent to the North Absaroka Inventoried Roadless Area, which includes the East Boulder Unit. The approximately 4,000 acre project area consists of the roaded portions of the East Boulder River Corridor, which is the WUI boundary (See Map 2). The analysis areas for the various resources consist of a mixture of National Forest System (NFS) and interspersed private lands and vary in size and configuration by resource.

The WUI as defined on Map 2 combines several parts of HFRA, Section 101.(16).(B) as the "area for which a community wildfire protection plan is not in effect" (HFRA, Section 101, (16).(B)). Because the Sweet Grass County CWPP stopped its WUI designation at the National Forest boundary, the mapped area meets criteria of both HFRA, Section 101, (16).(B).(ii) and (iii). The project treatment areas are "within 1 1/2 miles of the boundary of an at-risk community," and includes "land that (I) has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community;" as shown in the Sweet Grass County CWPP Land Cover Fire Risk. The area is also "adjacent to an evacuation route for an at-risk community that requires hazardous fuel reduction to provide safer evacuation from the at-risk community."

Healthy Forests Restoration Act of 2003 (HFRA), Section 101

(16) WILDLAND/URBAN INTERFACE- The term “wildland-urban interface” means:

- (A) An area within or adjacent to an at-risk community that is identified in recommendations to the Secretary in a community wildfire protection plan; or
- (B) In the case of any area for which a community wildfire protection plan is not in effect—
 - (i) An area extending 1/2-mile from the boundary of an at-risk community;
 - (ii) An area within 1 1/2 miles of the boundary of an at-risk community, including any land that—
 - (I) Has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community;
 - (II) Has a geographic feature that aids in creating an effective fire break, such as a road or ridge top; or
 - (III) Is in condition class 3, as documented by the Secretary in the project-specific environmental analysis; and
 - (iii) An area that is adjacent to an evacuation route for an at-risk community that the Secretary determines, in cooperation with the at-risk community, requires hazardous fuel reduction to provide safer evacuation from the at-risk community.

(1) AT-RISK COMMUNITY.—The term “at-risk community” means an area:

- (A) That is comprised of
 - (i) An interface community as defined in the notice entitled “Wildland Urban Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire” issued by the Secretary of Agriculture and the Secretary of the Interior in accordance with title IV of the Department of the Interior and Related Agencies Appropriations Act, 2001 (114 Stat. 1009) (66 Fed. Reg. 753, January 4, 2001)
 - (ii) A group of homes and other structures with basic infrastructure and services (such as utilities and collectively maintained transportation routes) within or adjacent to Federal land;
 - (B) In which conditions are conducive to a large-scale wildland fire disturbance event; and
 - (C) For which a significant threat to human life or property exists as a result of a wildland fire disturbance event.

Sweetgrass County Community Wildfire Protection Plan, 2008

5.3. Fire Risk, Hazard, and Occurrence (pp. 42-43)

“High risk exists in many locations throughout the county. The reason for this risk is based on fire exclusion and successful wildland fire suppression operation. The reasons for this are:

- Heavy dead and down surface fuels;
- Closed canopies;
- Thick ladder fuels to carry surface fires to the canopies;
- Multiple understories; and
- Steep topography associated with strong down canyon winds.

A large share of the remaining county is rated as high risk, which includes all subdivisions. This designation was determined by combining current fuel complex, concentration of structures (subdivisions) and historical large fire activity.

The purpose of our fire hazard assessment model is to develop a basic fire risk assessment and to prioritize areas within the county for suppression as well as fuels reduction efforts. The assessment consists of three sub-groups: risk, fuel hazard, and historic fire occurrence:

Risk is defined as potential risk of wildfire and is determined by the number of fire ignitions over a time period. Fire ignition points will be totaled and a low, moderate, or high rating will be assigned.

In looking at the GIS generated maps of Sweet Grass County some areas of potential risk began to take form. When the fuel models are overlaid with potential occurrence, the areas most likely to experience a wildland fire can be identified. By adding the areas of human occupation or high value, one can begin to assign priorities for protection. As with the federal agencies, the county’s first priority is protection of human life and the second priority is protection of personal property.

The following list represents Sweet Grass County’s current priorities in sequential order:

- Whispering Pines Subdivision
- Ken/Dan Acres Subdivision
- Main Boulder
- Stage Coach Estates Subdivision
- Deer Creeks
- Bridger Creeks
- **East and West Forks of the Boulder River**
- Stephens Hill Subdivision

- Indian Rings Subdivision
- Yellowstone Meadows Subdivision
- Eastern side of the Crazy Mountains”

6.6.1 Vegetation Management/Fuel Modification Projects (p. 52-56)

Proposed Project 6.6.1.1.3—“Project Coordinator: US Forest Service with the Fuels Committee—East Boulder Fuels Reduction Project. Approximate area of 700-1000 acres will be treated in the East Boulder Corridor. This project will tie in with the Beaver Meadows Project planned by the BLM in conjunction with the Fuels Committee. The East Boulder Project will begin the scoping process in January 2009 (p. 53).”

The areas being considered for treatment in the East Boulder Fuels Reduction Project are located along the one-way in/out East Boulder Road #205 and the Lewis Gulch Road #6644. All units are located inside the roaded portion of the drainage. No treatment activities are proposed in the adjacent inventoried roadless area (IRA). Fuel management treatments would begin at the Forest boundary, just north of the East Boulder Campground, and extend for approximately six miles east-southeast to the Dry Fork area, which is adjacent to the East Boulder Mine. Treatments along the Lewis Gulch Road would begin at the East Boulder Mine and extend to the southwest to the end of the Lewis Gulch Road. (Refer to Alternative Maps 3 & 4). The East Boulder River corridor is located in Sweet Grass County with proposed treatment units located in T.3.S, R.13.E, Sections 29, 32, & 33 and T.4.S, R.13.E, Sections 2, 3, 4, 5, 9,10, 11 & 15.

The East Boulder River corridor experiences frequent high wind events with wind speeds of up to 35-40 miles per hour, which sometimes persist for several hours. Dry thunderstorms, as well as Pacific Frontal Systems with their associated jet stream, occurring during the summer and fall often produce strong downdrafts in the narrow confines of the corridor. Given cured and dry vegetation these types of winds can result in extreme fire weather behavior.

Vegetative types vary within the corridor with spruce and remnant aspen occurring in the canyon bottoms and lower portions of the side drainages and increased amounts of Douglas-fir and lodgepole pine on the slopes above the canyon bottom. Conifers have encroached upon aspen stands leading to a decline in vigor and the loss of aspen in many areas. A continuous forest canopy covers much of the canyon. Forest floor fuels are moderate to heavy with heavy ladder fuels as well.

The East Boulder Road, the only road servicing the corridor, is a county road that is plowed year round and well maintained by Sweet Grass County. No major federal or state routes are found within the project area. The project area contains a mixture of privately owned and National Forest System lands with approximately 5 year-round private residences, as well as several cabins, out-buildings, and barns. The project area also contains one Forest Service campground, and two Forest Service trailheads.

In addition to the rural residences and recreation facilities, at the end of the East Boulder Road is the East Boulder Mine, a division of the Stillwater Mining Corporation, which is the largest private employer in the State of Montana. Because of recent downsizing due to market and economic conditions, there are currently approximately 300 employees stationed at the East Boulder Mine. Previous numbers of employees at the mine were significantly higher, which could also be the case in future years depending on market conditions. Paralleling the East Boulder Road is a high capacity transmission line (Owned by Park Electric Company) that provides a critical electrical source for mine operations. These operations range from everyday power usage in office settings, to air compressors and scrubbers that provide a breathable air source several miles below the surface of the ground for the actual mining operations.

The East Boulder Road is heavily traveled year round by mine employees, who are bussed in and out of the drainage, and contractor delivery services to the mine. Private residents use the road to access their homes and property. There is also light usage in the summer months and moderate usage in the fall/winter months by recreationists and hunters. The East Boulder Road, a gravel two-lane road provides the only access into the drainage. Emergency evacuation of the public from this corridor, in the event of a severe wildfire, would be difficult due to the proximity of heavy fuel buildups adjacent to the road.

The overall character of the East Boulder project area is dictated primarily from its location within a central southwestern Montana biological environment. The project area is located at the northern end of the Beartooth Mountain Range; where overriding geological features dictate elevation zones, variations in topography, and climate regimes. These general components, along with other determinants such as temperature, effective precipitation, and hydrologic regime tend to dictate the vegetation components of the area. A predominance of Douglas-fir (*Pseudotsuga menziesii*) and lodgepole pine (*Pinus Contorta*) occur throughout the area; and to a lesser degree, a mix of Englemann spruce (*Picea engelmannii*), subalpine fir (*Abies lasiocarpa*), aspen (*Populus tremuloides*), big sagebrush (*Artemisia tridentata*), other shrub-steppe, meadows, and riparian complexes exist. Elevations within the project area range from 5700' to 7800' and topographic features are typical of mountainous regions, with rolling hills to steep terrain with saddles and ridges.

The dominant cover types of lodgepole pine and Douglas-fir can generally be found on the drier sites. Often, the moist sites may favor Englemann spruce and in some areas quaking aspen. Park and meadow complexes are dominated by grass and sagebrush communities. Riparian complexes (Seeps, springs, and willow carrs) are found throughout the drainage. Forested stand conditions can be described, in the non-managed stands, as mature forests with active insect and disease activity. Most stands in this area had a natural re-establishment following the last stand-replacement disturbance, such as fire, an insect outbreak, or both.

The primary concern related to the current fire risk within the East Boulder project area is the vertical and horizontal arrangement of fuels, including standing and downed woody fuels, as well as the smaller understory tree components. Natural successional stand

development, in conjunction with years of successful fire suppression and a consequent lack of low intensity, stand maintenance fires have resulted in greater tree densities, with higher fuel loadings, and a continuous horizontal fuel bed arrangement throughout the drainage. Stand ‘densification’ has also resulted in little or no space between the crowns of trees. A lack of low intensity ground fire in the drainage has allowed smaller, shade-tolerant trees to grow under the large, mature trees creating what are referred to as ‘ladder fuels’. The resulting vertical continuity of fuels could easily carry a wildfire from the ground up into the mature tree crowns. These increasing stand densities and fuel loadings, along with the continuous fuel bed arrangement (both horizontal and vertical) are key components for a potentially extreme crown fire situation.

The project area is also currently experiencing a building population of mountain pine beetle infestation, small patches of Douglas-fir beetle mortality, as well as infestations of spruce budworm (See Insect & Disease analysis in Chapter 3). As insects and disease move across the landscape and stands of trees become infested/infected, red needles on standing dead trees become highly volatile and act as a catalyst for intense wildfire behavior. These elevated intensities would, however, decrease over time as the finer fuels decompose at their natural rate. As standing dead and down trees become more frequent, the volume of surface fuels increase, resulting in the likelihood that a small, low intensity ground fire could become a large, intense, uncontrollable fire (NEXUS modeling, Project File).

1.3 FIRE HISTORY OF THE AREA

Although not an official fire history study, in 1904 John Leiberg documented the types of forest vegetative conditions in what was then called the Absaroka Division of the Yellowstone Forest Reserve. Leiberg notes that in the townships associated with the analysis area “Extensive burns have devastated the township, chiefly in the southern and eastern areas.” The time in which the fires occurred was not clear, but they appeared “to date back seven to eight years and have destroyed the timber on over 14,000 acres.” Seemingly the testimony from Leiberg would be consistent with the ages, species distribution, and vegetative patterns of the current forested areas within the Boulder River drainages. Fire frequency in the Boulder River drainages has increased significantly over the past 20 years. This increased fire occurrence can be attributed to the following factors:

- Maturing fuel complexes
- Insect and disease outbreaks
- Urban interface development
- Climatic changes
- Large expanse of forest types due to fire exclusion
- Changes in land use due to changes in ownership and management practices.

During the 1988 fire season, two large wildfires (Storm Creek and Hellroaring) were recognized as having the potential to enter the Boulder River drainage from the south. At

that time, fire management personnel from the Gallatin National Forest recognized the need for further pre-planning to avoid catastrophic losses in the Boulder River drainage. The largest fires in Sweet Grass County history have taken place more recently. One hundred years of successful wildland fire suppression efforts, significant vegetative changes, and climatic changes place the county and its residents in potentially hazardous situations during periods of moderate to severe fire weather. Recent wildfires in Sweet Grass County in various portions of the Boulder drainages include:

1. August 1994, Black Butte Fire in the Deer Creek Drainage
2. 1995, Castle Creek Fire
3. April 1996, Lower Deer Creek Fire
4. August 1996, Cherry Creek Fire
5. July 2000, multiple small fires south of Big Timber
6. October 2002, Boulder Fire near Clydehurst church camp
7. August 2003, multiple small fires in the Boulder drainages
8. July 2005, West Boulder fire
9. August 2006, Derby Fire, 204,000 acres threatening the East Boulder Drainage
10. August 2006, Jungle Fire, 37,000 acres in the West and Main Boulder Drainages
11. August 2007, Hicks Park Fire, 2,500 acres in the Main Boulder Drainage

Recent fire history, however, does not reflect many large wildfire events that actually lay within the East Boulder drainage, however, multiple fire ignitions were recorded (See Map 6). Under the context of National Wildfire Reporting System, large wildfire events are defined as fires greater than one hundred acres in size. Although not quite 100 acres, the Snowslide Fire in 1991 is the closest reported large wildfire to the project area. The Snowslide Fire was lightning caused and resulted in approximately 91 acres burned. The location of the fire was approximately two miles east of the East Boulder Mine in the Dry Fork of the East Boulder River. Fire effects associated with the Snowslide Fire were complete stand replacement due to independent crown fires. The fire burned until confined by natural barriers regardless of suppression efforts by both federal and local government fire suppression entities.

Recent wildfires of notable interest that threatened the East Boulder drainage are the Jungle and Derby Fires of 2006. The Derby Fire burned approximately 204,000 acres, costing nearly twenty-three million dollars to suppress. The Derby Fire forced two separate closures of the East Boulder Mine because of threats to employees' health and safety from ambient smoke, as well as threats to the integrity of mine structures, costing the Stillwater Mining Corporation approximately \$750,000 per day that operations were interrupted.

Coincidentally the Derby, Jungle, and all of the other large fires of notable interest that were recorded within these areas seemingly have similar characteristics, which are reflected in the undesirable fire effects. The primary commonality of these large fire incidents are a combination of topographical alignment with prevailing wind patterns. Most of the major drainages within the AB Wilderness have a south to north positioning. Typically these drainages experience a westerly flow wind pattern throughout the

summer months. However, when winds align with the topographical influences from a southerly direction, both topography and wind become the contributing factors for large fire growth. When combined with available fuel, these factors act as a funneling mechanism that allows for explosive fire growth. Such was the case with Jungle Fire in 2006. The Jungle fire started in the headwater area of the West Boulder River, which is approximately fourteen miles south of the shared boundary between National Forest System lands and private lands. For the first several burn periods, the fire was not very active and taking into account the distance to infrastructure and Wildland Urban Interface, the fire was not considered a priority and efforts were focused on fires with more imminent threat. The conditions described above surfaced several days later, and the Jungle Fire made a fourteen mile run to the north in less than two burn periods, which required significant suppression actions to contain.

There have been no prescribed fires ignitions within the immediate project area, however, in the Dry Fork of the East Boulder River, adjacent to the east edge of the project area (within the analysis area for some resources), both hand thinning and two applications of prescribed fire were implemented as part of the Long Mountain Hazardous Fuels Reduction Project. The mechanical hand thinning was completed in fall of 2004. The first of the prescribed fire applications was implemented in May of 2008, burning approximately five-hundred and fifty acres. More recently, in September of 2009, the Dry Fork prescribed fire units were completed with the burning of approximately 2300 acres. The overall objective of the Long Mountain Hazardous Fuel Reduction was to reduce conifer encroachment on grass and sagebrush meadows as well as within aspen stands; maintain areas of vegetation, fuels, and disturbances characteristic of the natural regime, and provide for public and fire fighter safety.

1.4 PURPOSE AND NEED FOR THE PROJECT

The primary purpose and need for this project is to improve public and firefighter safety by reducing the probability and effects of human caused fire starts in the corridor and reducing the effects of wildfire entering into the WUI of the East Boulder River Corridor. This would be accomplished by breaking up the vertical and horizontal continuity of fuels by thinning trees, and removing ladder fuels and vegetation along the corridor. Reducing the continuous fuel loadings in the East Boulder corridor would improve public and firefighter safety, as well as the safety of employees at the East Boulder Mine, by lessening the speed and intensity, and altering the pattern of a potential wildfire, thereby gaining additional time to implement an effective emergency evacuation out of the corridor and to conduct other necessary safety measures.

Other project related objectives include:

- Creation of residual stand conditions in the corridor where trees are less susceptible to future insect and disease infestation.
- Encouragement of adjacent private property owners and local groups to develop hazardous fuel reduction plans.

Criteria used in determining treatment areas include:

- The potential to reduce the effects of human-caused fire starts along the East Boulder Road corridor.
- The ability to improve public and fire fighter safety in wildfire situations.
- The ability to break up the vertical and horizontal fuel continuity through the corridor in order to modify potential wildfire behavior
- The ability to reduce future Douglas-fir and lodgepole pine mortality from bark beetle attacks at the stand level within the East Boulder corridor.

1.5 DESCRIPTION OF THE PROPOSED ACTION

The proposed action was designed to meet the purpose and need for the project. This proposal was developed considering the areas of high fuel hazard, high risk of human-caused ignition, and high social values. Considering hazard, risk, and value, stands of trees that have high potential for lethal fire to affect lives and property in this wildland/urban interface were included for treatment in this alternative. The proposed action is consistent with management direction in the GNF Forest Plan.

The project area is situated within the roaded portion of the East Boulder River corridor. Proposed treatment units are situated along the East Boulder Road #205, from the Gallatin National Forest boundary east to areas adjacent to the East Boulder Mine (approximately six miles). Proposed treatments are also being considered for areas adjacent to the Lewis Gulch Road, which lies to the south of the East Boulder Mine. All of the proposed treatments are on National Forest System lands. Private property will not be treated as a part of this proposal. All treatment areas lie within the East Boulder WUI, which was identified in the Sweet Grass County Community Wildfire Protection Plan (CWPP) as a priority area for treatment (p. 43).

Vegetation types in the East Boulder Corridor include Douglas-fir, Englemann spruce, lodgepole pine, subalpine fir, and native grasslands. Proposed treatment units are identified on Maps M-3 and M-4. The mapped areas depict approximate treatment unit boundaries and include small natural openings and other small topographic features that may be excluded from treatment. Up to approximately 660 acres in 17 treatment units would be tractor harvested, approximately 70 acres in 4 units would be skyline cable harvested, and an additional 140 acres would be scheduled for hand treatments.

Leave trees would be unevenly spaced with patches of multi-storied trees as well as open spaced individual trees. The continuity of vertical and horizontal fuels among individual trees within a stand would be broken. Prescriptions would vary between adjacent stands to help break up fuel continuity among stands. Pile burning would occur in conjunction with the treatment activities. Detailed descriptions of the individual proposed treatment units to be implemented with the proposed actions can be found in Ch. 2-8 through 2-22. Tables 2-1 & 2-2 (Ch. 2-11 through 2-17 & 2-20) displays individual unit information (Unit #, acres, logging system, management area, roads needs, unit treatment type,

riparian treatment type, and season of treatment). Specific operating periods for the various associated activities are described in Ch. 2-18 & 2-19. Design criteria and mitigation measures that are applicable to all units can be found in Ch. 2-23 through 2-37. All of the treatments associated with the proposed action have been designed to maintain and protect values for the East Boulder River. Mechanized equipment would not be allowed within Streamside Management Zones or wet areas in conformance with the State of Montana Best Management Practices (BMP's).

Treatment Prescriptions

Table 1-1 below outlines various forest types, treatment descriptions, and treatment effects associated with the proposed action. Actual treatment prescriptions for the individual units are based on current conditions, such as fuel continuity, fuel arrangement (vertical and horizontal), and vegetative types and are outlined in Chapter 2 for the various alternatives.

Table 1-1 Treatment Types, Descriptions, and Projected Effects

Forest Type	Treatment Description	Treatment Effects
(>30%) DF & Mixed Species Dominated Stands in MA11	40-60% canopy retention, Irregular spacing with 13-15 ft. between crowns, Favor DF, then S to leave, Leave 15-20 % of unit acres in untreated clumps of approx. 1/3 acre in size. Very small or linear units may not include clump retention.	Space between leave tree crowns would limit the ability for wildfire to move through the remaining overstory. Crown fires entering the treatment area would drop from the crowns to the ground, creating a surface fire situation. Clumps provide for visual quality and wildlife habitat
(>30%) DF & mixed species Dominated Stands in MA8	35-45% canopy retention, Irregular spacing with 13-15 ft between crowns, Favor DF then S to leave. Most LP and AF would be removed	Space between leave tree crowns would limit the ability for wildfire to move through the remaining overstory. Crown fires entering the treatment area would drop from the crowns to the ground, creating a surface fire situation.
(>70%) LP Dominated Stands in MA 11	40-50% canopy retention, Leave DF & S where available 13-15 ft between crowns. Leave 15-20 % of unit acres in untreated clumps. LP clumps would be 1/10 to 1/8 acre in size. There will be some open areas within these stands.	Space between leave tree crowns would limit the ability for wildfire to move through the remaining overstory. Crown fires entering the treatment area would drop from the crowns to the ground, creating a surface fire situation. Leaving clumps would provide for visual quality and wildlife habitat

Forest Type	Treatment Description	Treatment Effects
(>70%) LP Dominated Stands in MA 8	20%-40% canopy retention, Leave DF & S as clumps or individual trees where available. Most LP would be removed. Where no other species are available LP would be left in small clumps 1/10 to 1/8 acre. There will be open areas in these stands.	Space between leave tree crowns would limit the ability for wildfire to move through the remaining overstory. Crown fires entering the treatment area would drop from the crowns to the ground, creating a surface fire situation.
Hand Treatments	Thinning from below, small diameter trees, ladder fuels will be cut, slashed, hand piled and burned or otherwise removed. Edges will be feathered where necessary to blend with adjacent stands.	Removal of small diameter trees would limit a surface fire's ability to reach conifer crowns. Ladder fuels are the transitional fuels that allow a fire burning on the surface to extend up into the canopy of mature conifers.
Downed Woody Materials	Approximately 15 tons/acres would be left on site in treatment areas, where available, as required by the Gallatin National Forest Plan	Down woody fuel removal would concentrate on small diameter fuels. Down woody material > 3 inches in diameter is not a large contributing factor to rapid fire growth and would be favored to leave.

Other types of treatments that are included in the proposed action in conjunction with thinning activities include:

- Piling of natural and/or treatment-related fuels, followed by burning of piles;
- Trampling or crushing natural down, woody fuels that are presently suspended above ground - by trampling these fuel conditions, the woody material would be in close contact with the ground, thus accelerating the decomposition process.

Riparian Areas

Harvest will not occur within 15 feet of the East Boulder River or within 50 feet of Twin Creeks, Lewis Creek, and Wright Creek, or within 100 ft of the upper portions of Lewis Creek. Fifty percent of the trees 8" and greater would also be retained in treatment areas adjacent to the East Boulder River beyond the 15 foot no-cut buffer and there would be no harvest on steep slopes leading directly into the East Boulder River (Riparian Reserves). Unit boundaries would be located on the bench and field verified by the fisheries biologist. Riparian reserves will be joined with other retention areas where possible. No-cut buffers around water bodies will be utilized to prevent disturbance to soil, organic matter, and surface vegetation in order to maintain and enhance their function as sediment catches and refuge for wildlife.

Roads

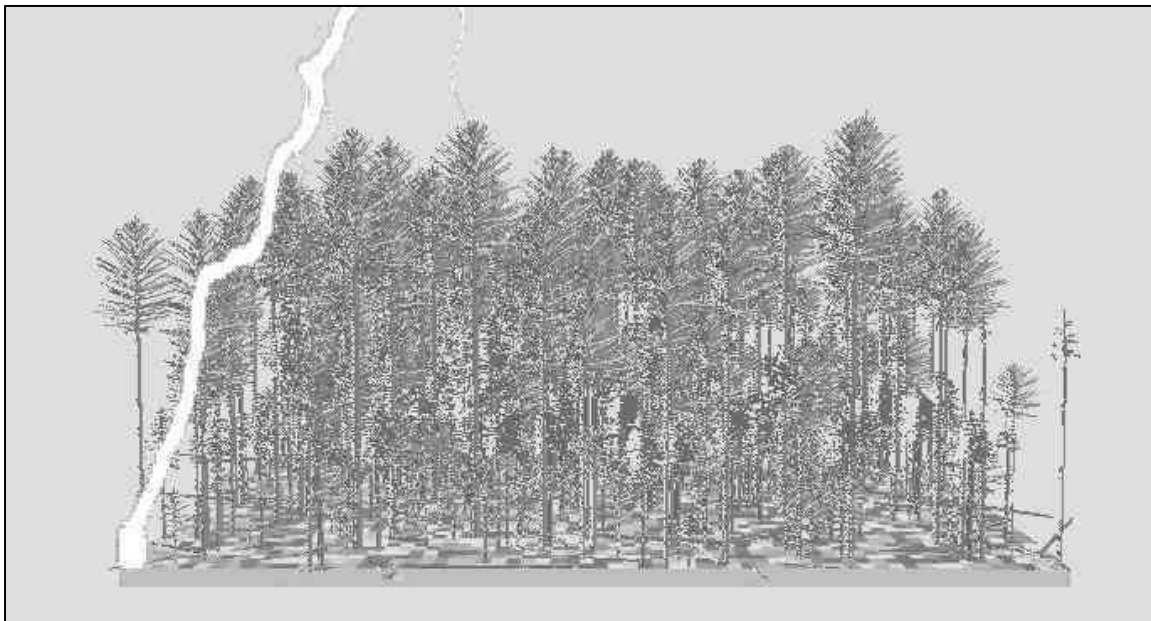
No new permanent road construction is being proposed for the project. Primary access will be provided by the East Boulder Road #205 and the Lewis Gulch Road #6644. Commercial harvest operations are expected to require the construction of some temporary roads. A maximum of 3.5 miles of temporary road may be needed to access the areas proposed for mechanical fuels treatment using conventional ground-based logging systems (tractor and skyline). Another ½ mile of existing road maintenance may be needed to provide access to treatment areas. These areas will be re-examined on the ground prior to project implementation to determine whether opportunities exist to reduce the length of newly constructed temporary road. Some private roads will be used. One of the key factors in determining the use of existing roads on private land is whether permission to use the roads can be obtained. Existing roads on either ownership may require maintenance to support safe and efficient use, consistent with project design criteria and mitigations. Options to use existing roads will be examined to assure that the environmental effects of using roads on private and public land do not exceed what has been disclosed in this document. Tables 2-1 through 2-2 in Ch. 2-11 through 2-17 & 2-20 disclose the approximate locations of proposed temporary roads, including those roads to be re-examined.

Actual temporary road locations are determined through agreement by the Forest Service during timber sale contract administration. Temporary roads would be constructed to provide access to the interior of harvest units to facilitate ground-based harvest systems. These roads would be built on relatively flat ground slopes (less than 20%) and would be constructed to the lowest possible standard capable of supporting log haul in order to minimize ground disturbance. Temporary road construction, including clearing and removing of wood products from within the road right-of-way, would likely occur from July 1- October 30. All newly constructed temporary roads would be closed to the public during harvest activities and permanently closed and rehabilitated within one year upon completion of harvest related activities. All new temporary roads will be recontoured and rehabilitated making the temporary roads on National Forest System lands impassable for any motorized travel, as well as necessary other resource protection practices. Existing roads that are improved and utilized for project related activities that are no longer needed, do not include deeded access to private lands, or are not identified to remain open in accordance with the October 2006 Gallatin National Forest Travel Plan Decision would also be rehabilitated within one year of completion of project related activities.

Implementation Timeframe

The East Boulder Road is plowed year round to provide access to the East Boulder Mine. Ground disturbing mechanical treatments in units adjacent to the East Boulder Road and/or East Boulder River would occur in the winter over 4” of frozen ground or 8” of settled snow to help avoid the spread of noxious weeds and protect water quality in the East Boulder River. Treatment units located along the Lewis Gulch Road would be harvested in the fall/winter from mid-August until snow accumulations prevent harvesting operations. Several of the units would utilize cable harvest systems, which can’t be safely and effectively completed over heavy snow and there are not known weed populations in these units. Handtreatment units with no ground disturbing activities would not have limited implementation timeframes. Pile burning would occur in the spring, fall, or winter. See Chapter 2 for complete implementation timeframes and restrictions for the various treatment units and alternatives

The entire project is expected to take up to 5 years to complete. Implementation could begin as early as Fall/Winter 2010.



**Wildfire Progression Simulation Current Conditions
(Ignition)**



**Wildfire Progression Simulation with Alternative 1-No Treatment
(Crown Fire)**



**Post-Treatment Wildfire Progression Simulation with Implementation of
Alternatives 2 & 3 (Ground Fire)**

1.6 SCOPE OF THE PROPOSED ACTION

The Council of Environmental Quality (CEQ) regulations implementing NEPA define the “scope” of an action consisting of “the range of actions, alternatives, and impacts to be considered”. To determine the scope, federal agencies shall consider three types of actions; (1) connected actions; which are two or more actions that are dependent on each other for their utility; (2) cumulative actions; which when viewed with other proposed actions may have cumulatively significant effects and therefore be analyzed together; and (3) similar actions; which when viewed with other reasonably foreseeable or proposed actions have similarities that provide a basis for evaluating their environmental consequences together. (40 CFR 1508.25).

The scope of the proposed actions addressed in this FEIS is limited to stand density reduction and the reduction of downed fuel loadings on National Forest Land including:

- Thinning large diameter green conifers
- Harvesting insect or disease damaged/killed conifers.
- Cutting small diameter conifers and ladder fuels
- Cutting and removing conifers encroaching into aspen stands.
- Piling and removing or burning downed woody materials and fuels resulting from treatment actions.
- Construction and rehabilitation of up to 3.5 miles of temporary road to access treatment units
- Maintenance on up to ½ mile of existing roads to access treatments units

Actions that are not within the scope of the proposed action include:

- Decisions supported by an environmental analysis of the current situation commonly remain valid for six to ten years. Fuel reduction and maintenance projects that may become necessary and could begin beyond this timeframe (twenty or more years) are outside the scope of the decision to be made. The environmental effects of any future projects would be disclosed and a project-specific decision made before these projects would be implemented.
- The Forest Service can only guess what types of fuel reduction activities may occur on private land and the agency has no control over the amount or type of activity occurring on private land. Decisions private landowners may make concerning fuel reduction activities on private land are outside the agency’s authority and so outside the scope of the decision to be made.

1.7 RELATIONSHIP TO THE GALLATIN FOREST PLAN AND OTHER ADMINISTRATIVE DIRECTION

Gallatin Forest Plan

The Gallatin Forest Plan (1987) embodies the provisions of the National Forest Management Act, its implementing regulations, and other guiding documents. The Forest Plan sets forth in detail the direction for managing the land and resources of the Gallatin National Forest. The East Boulder Fuel Reduction Project tiers to the Forest Plan FEIS, as encouraged by 40 CFR 1502.20. Chapter 3 includes a summary by resource of the standards and guidelines established in the Forest Plan that are pertinent to this action. The proposed action is also supported by the following Forest Plan direction:

Forest Plan Goals

- Provide a fire protection and use program that is responsive to land and resource management goals and objectives. (FP p. II-2)

Forest Plan Standards

- Fire Standards: Treatment of natural fuel accumulations to support hazard reduction and management area goals will be continued. (FP p. II-28)

The Forest Plan uses management areas to guide management of the National Forest lands within the Gallatin National Forest. Each management area (MA) provides for a unique combination of activities, practices, and uses. The East Boulder Fuels Reduction project area includes five management areas. The majority of the timber harvest and thinning activities involved with this project would occur in MA8 and MA11, with a few small inclusions of MA3 and MA12 and linear inclusions of MA7. The majority of the temporary road construction would occur in MA8 with some limited temporary road construction also occurring in MA11. All fuel reduction activities associated with the proposed actions comply with Forest Plan guidelines for the applicable MAs (See MA Map 5) and Tables 2-1 & 2-2 (Individual Unit Descriptions) for MA designations of individual units.

The Forest Plan (Chapter III) contains a detailed description of each management area as it relates to significant issues. Following is a brief description of the applicable management area direction for each of the MAs affected with the proposed action:

Management Area 8 (MA 8)- These areas consist of lands that are suitable for timber management. Douglas-fir and lodgepole pine should be favored in timber management. Both even aged and unevenaged harvest methods should be included. Project plans should incorporate considerations for fish and wildlife. Wildfire suppression response will be control.

Management Area 11 (MA 11)- These areas consist of forested big game habitat. They include productive forestlands that are suitable for timber harvest, provided that big game habitat objectives are met. Include even and uneven aged harvest systems. Wildfire suppression response will be control.

Management Area 3 (MA 3) - These areas consist of non-forest, noncommercial forest, and forested areas unsuitable for timber production. Timber salvage, product and firewood removal may occur where access exists. Salvage of dead, dying, or high-hazard trees to prevent insect and disease population buildups that could adversely affect regulated timber stands is permitted. Wildfire suppression response will be control, contain, or confine.

Management Area 7 (MA 7) - These areas consist of lands bordering lakes, streams, and/or springs that support moisture loving vegetation. They will be managed to protect the soil, water, vegetation, fish and wildlife dependent on it. These areas are classified as suitable for timber production if adjacent areas contain suitable timber. Design timber harvest to meet the needs of riparian dependent species. The wildfire suppression response will be the same as for the management areas surrounding riparian areas. *Note: These areas are normally too narrow to be displayed on Forest MA maps.*

Management Area 12 (MA 12) - MA 12 provides goals and objectives to maintain and improve the vegetative condition to provide habitat for a diversity of wildlife species and a variety of dispersed recreation opportunities. Harvest of post, pole, and other wood products can take place adjacent to existing roads. Wildfire suppression response will be control, contain, or confine.

Other Administrative Direction

Project objectives include creating a more defensible area in the Wildland Urban Interface (WUI) by reducing the wildfire severity risk and crown fire hazard in the East Boulder River Corridor. National, regional, and forest level reports have set the stage for more aggressive fuels management:

- Directed by National Fire Plan (2000), A Cohesive Strategy (October 2000), 10 Year Comprehensive Strategy (August 2001), 2001 Review and the 1995 Federal Wildland Fire Management Policy, and the Gallatin National Forest Fire Management Plan, (annual).

National Fire Plan (2000) states:

“Hazardous Fuels Reduction – Assign highest priority for hazardous fuels reduction to communities at risk, readily accessible municipal watersheds, threatened and endangered species habitat, and/or other important local features, where current conditions favor uncharacteristically intense fires”.

Protecting People and Sustaining Resources in Fire-adapted Ecosystems – A Cohesive Strategy, October 2000. This report outlines a strategy to reduce wildland fire threats and restore forest ecosystem health in the interior West. The Cohesive Strategy outlined four priorities: 1) wildland urban interface; 2) readily accessible municipal watersheds; 3) threatened and endangered species habitats; and 4) maintenance of existing low-risk Condition Class 1 areas (refer to 2.3.B).

A Collaborative Approach for Reducing Wildland Fire Risk to Communities and the Environment – 10-yr. Comprehensive Strategy, August 2001. This document responds to Congressional direction for a multi-agency strategy by outlining a comprehensive approach to the management of wildland fire. The 10-year comprehensive strategy has four goals: 1) improve prevention and suppression; 2) reduce hazardous fuels; 3) restore fire-adapted ecosystems; and 4) promote community assistance. This document provides the initial foundation of the recent President's Healthy Forest Initiative (August 2002).

The 1995 Federal Wildland Fire Management Policy and Program contains nine guiding principles that are supported by the ***Gallatin National Forest Fire Management Plan***, which is updated annually.

- 1.) ***Firefighter and public safety is the first priority in every fire management activity.*** The purpose and need of the East Boulder Fuels Reduction project is to provide for firefighter and public safety, modifying fire behavior by changing the vertical and horizontal continuity of fuels throughout the project area. This modification of fuels will provide safer conditions in the event of a large wildfire event.
- 2.) ***The role of wildland fire as an essential ecological process and natural agent have been incorporated into the planning process.*** Treating the Wildland Urban Interface areas will reduce the current level of risk, allowing the possibility of future wildland fires to play an ecological role in the Absaroka-Beartooth Wilderness landscape under certain conditions.
- 3.) ***Fire management plans, programs, and activities support land and resource management plans and their importance.*** The project is consistent with the Federal Wildland Fire Management Policy and the Gallatin National Forest Fire Management Plan.
- 4.) ***Sound risk management is the foundation for all fire management activities.*** The East Boulder Fuel Reduction project analyzes the risk to the public and firefighter communities associated with each alternative, by comparing the resulting fuel conditions associated with management activities versus “no action”, as related to fire behavior.

- 5.) ***Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.*** With the East Boulder Fuel Reduction project, the overriding value at risk is the safety of the public and firefighters. A financial efficiency summary included in Appendix A supports the conclusion that:
- ... The predicted high bid for the sale of wood products is likely to cover the majority of the restoration activities associated with the project...
- 6.) ***Fire management plans must be based on the best available science.*** The East Boulder project has incorporated the latest science and modeling techniques for fire behavior prediction and the effectiveness of fuels treatments (NEXUS and FARSITE).
- 7.) ***Fire management plans and activities incorporate public health and environmental quality considerations.*** The East Boulder Fuels Project addresses the need for increasing public and firefighter safety in the event of a large wildfire event. Smoke management, recreational values, and the impacts of fuels treatments on wildlife, fish, noxious weeds, soils, and visual quality are also addressed in the document.
- 8.) ***Federal, Tribal, State and local interagency coordination and cooperation are essential.*** Coordination and cooperation for the project included local consultation with the Stillwater Mining Company, Boulder Watershed Group, BLM, Sweet Grass County officials including fire and law enforcement, Big Timber city officials, and local environmental groups. Federal cooperation and consultation includes the Fish and Wildlife Service, State, Federal, and Private Forestry groups and interested tribal governments.
- 9.) ***Standardization of policies and procedures among Federal agencies is an ongoing objective.*** This is not applicable to this particular project.

1.8 DECISION TO BE MADE

This Environmental Assessment (EA) is not a decision document. It does not identify the alternative that will be selected by the Deciding Official. This document discloses the environmental consequences of implementing the proposed action and alternatives to that action. The Big Timber District Ranger is the Deciding Official. Based on the analysis documented in this EA, and comments received during the 30-day comment period, the Deciding Official will make a decision regarding this project. His decision and the rationale for that decision will be stated in the Decision Notice for the project.

The decision to be made includes:

- What types of hazardous fuels reduction treatments should occur, if any, to improve public and firefighter safety in the East Boulder River corridor.
- What, if anything, should be done to extend the potential time available for evacuation in the event of a wildfire in the project area
- Should fuel loadings be reduced and fuel arrangements modified to break-up the continuous vertical and horizontal fuels present in the corridor.
- What mitigation and monitoring requirements should be included?

The decision will be documented in a Decision Notice with official notification published in the Bozeman Chronicle, which is the paper of record for the Gallatin National Forest.